

# Type-A aortic dissection masquerading as acute inferior wall myocardial infarction - A rare case report

**To Cite:**

Bawiskar N, Kamat S, Acharya S, Mohale S, Kumar S. Type-A aortic dissection masquerading as acute inferior wall myocardial infarction - A rare case report. Medical Science, 2022, 26, ms61e2007.  
doi: <https://doi.org/10.54905/dissi/v26i120/ms61e2007>

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**Peer-Review History**

Received: 13 December 2021

Reviewed & Revised: 17/December/2021 to 02/February/2022

Accepted: 03 February 2022

Published: 08 February 2022

**Peer-review Method**

External peer-review was done through double-blind method.

URL: <https://www.discoveryjournals.org/medicalscience>



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**ABSTRACT**

Aortic dissection occurs secondary to splitting of the layers in the wall of the aorta. There is a tear in the intima that results in entry of blood in between the intima and media. Type A dissection typically occurs in the ascending part of the aorta. The tear is brachiocephalic artery. It is a medical emergency. Mortality is high even though there is an advance in medical and surgical techniques. Acute myocardial infarction is a clinical mimic of aortic dissection. This case report discusses a patient with chest pain in the retrosternal area radiating to the back; aortic dissection manifesting as acute inferior wall myocardial infarction.

**Keywords:** acute myocardial infarction, aortic dissection, chest pain

**1. INTRODUCTION**

Aortic dissection is a condition characterized by separation in the layers of the aortic wall. It has many clinical manifestations with life threatening implication (Isselbacher et al., 2016). The clinical picture of aortic dissection is like acute myocardial infarction (AMI). At times ST elevation may be present which makes it easier to misdiagnose aortic dissection as AMI (Koracevic, 2013). Both aetiologies require emergency interventions but have significantly different modes of management (Lentini & Perrotta, 2011). If in aortic dissection thrombolysis is done, the intima may further rupture and lead to uncontrolled bleeding culminating in death of the patient. This especially occurs when the dissection of the aorta extends up to the coronary ostium and masquerades as AMI (Núñez-Gil et al., 2015).

**2. CASE**

A male, 50 years of age presented to the casualty of our hospital with the complaints of retrosternal chest pain radiating to the back since 3 hours. No history of breathless, palpitations, sweating, cough, orthopnoea or paroxysmal nocturnal dyspnoea was obtained. The patient had no comorbidities. There was no significant past medical history. On examination his pulse was

90/minute, respiratory rate was 22/minute, blood pressure was 170/94 mmHg. On auscultation of the chest air entry was bilaterally equal, no adventitious sounds were heard, heart sounds were normal and no murmurs were perceived. ECG showed a sinus rhythm with ST segment elevation in leads aVF, II and III (Figure 1). He was given loading doses of Ecosprin (300mg), Clopidogrel (300mg) and atorvastatin (80mg) and was admitted in the ICU (intensive care unit) for further management. The required samples were collected and Antianginal drugs like isosorbide dinitrate and nifedipine were administered. In view of persistent pain especially radiating to the back a 2D echo was planned before thrombolysis. The 2D echo revealed a break in the intima with dissection flap separating the false & the true lumen suggestive of aortic dissection (figure 2). The patient was shifted to cardiac catheterization laboratory where a coronary angiography was done which showed a 20% luminal narrowing in right coronary artery. A Computed Tomography aortogram showed dissection of aorta proximal to the brachiocephalic extending up to the coronary ostia. The patient was shifted for emergency cardiac surgery. Post operatively the patient did not make a full recovery and succumbed.

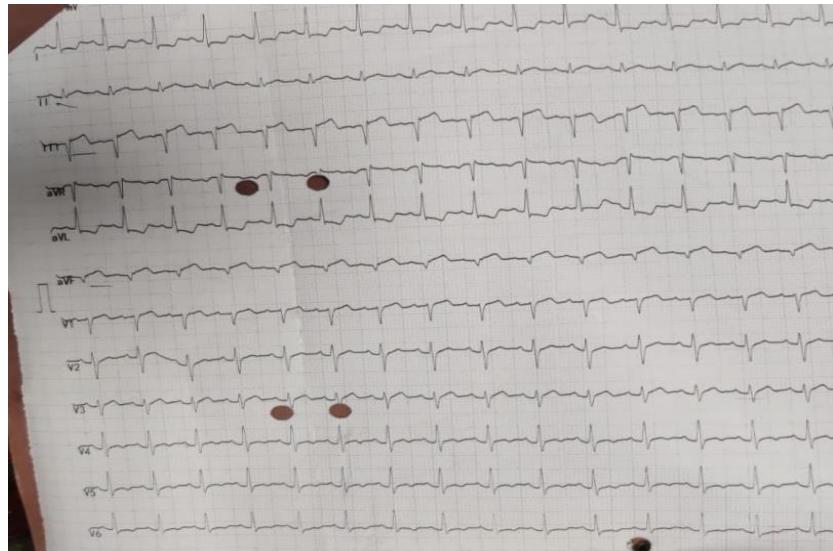


Figure 1 ECG suggestive of ST segment elevation in leads aVF, II and III

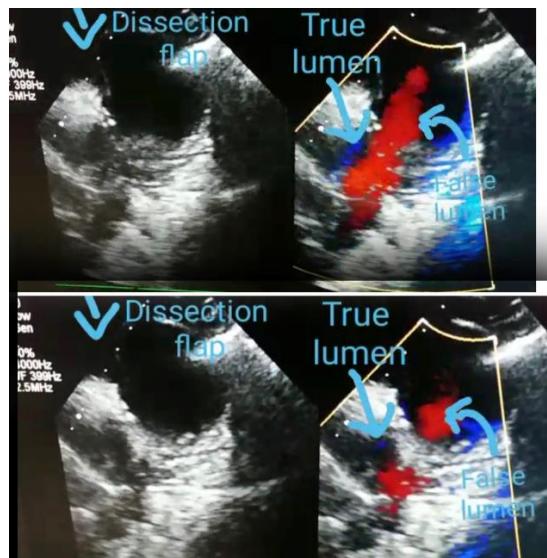


Figure 2 2D echo showing A true lumen, dissection flap and false lumen.

### 3. DISCUSSION

Concomitant acute myocardial infarction is seen in approximately 7% of the patients with aortic dissection (Kohl et al., 2014). At times aortic dissection may be the only entity but mimics AMI. In such cases it is important to confirm the diagnosis before initiating reperfusion therapy (Williams et al., 2012). Acute myocardial infarction can occur secondary to extension of the dissecting membrane into the coronary ostium in Type-A Aortic Dissection. Dissection commonly originates superior to the

coronary sinus on the right. The false lumen can compress the proximal coronary artery and produce myocardial ischemia. As dissection is commonly in the ascending aorta at the right anterior aspect RCA involvement is more (Sasaki et al., 2013). Transthoracic echocardiography (TTE) and D-dimer testing are helpful in assessing patient with chest pain. Ct Aortogram further helps in establishing the diagnosis (Luo et al., 2009). The definite diagnosis of Aortic Dissection is established by imaging modalities like echocardiography and CT Aortogram. TTE has a sensitivity of 77% and specificity of 93% to 96% for identification of proximal AD (Hiratzka et al., 2010). For any patient with Acute Myocardial Infarction (AMI) , Aortic Dissection could be missed resulting in catastrophic consequences. Cardiac catheterization and Antiplatelet therapy are the therapeutic approaches to acute myocardial infarction and are two absolute contraindications to the treatment of Aortic dissection. Both of them can increase the range for dissection, can aggravate bleeding and lead to death (Luo et al., 2009).

Our patient presented with chest pain radiating to the back which persisted even after administration of anti-anginal drugs therefore even though the ECG was suggestive of inferior wall myocardial infarction a 2D echo was done prior to thrombolysis. Because of a flap and false lumen, thrombolysis was averted and the patient was taken to the cardiac catheterization laboratory for angiography. This clinical case highlights the importance of meticulous history taking and clinical judgement in cases of acute chest pain presenting to emergency department. All cases of acute onset chest pain are not acute coronary syndromes. Chest pain radiating to back associated with high blood pressure should alert the treating physician to consider alternate diagnosis like aortic dissection. Inadvertent thrombolysis in aortic dissection is catastrophic.

#### 4. CONCLUSION

Aortic dissection needs to be identified in all cases with AMI when there is characteristic chest pain, radiating to the back. Thrombolysis in such cases may be fatal without adequate evaluation. Hence it is essential to assess all patients with raised blood pressure and chest pain radiating to the back before thrombolysis.

#### Acknowledgement

I would like to thank my guide Dr Sourya Acharya sir for making this publication a possibility. I would also like to thank the patient for being cooperative.

#### Author Contributions

Nipun Bawiskar, Sandeep Kamat, Sourya Acharya, Sandeep Mohale, Sunil Kumar -concept and writing of the manuscript.

#### Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

#### Funding

The study did not receive any external funding.

#### Conflict of interests

The authors declare that there are no conflicts of interests.

#### Data and materials availability

All data associated with this study are present in the paper.

#### REFERENCES AND NOTES

1. Hiratzka LF, Bakris GL, Beckman JA, Bersin RM, Carr VF, Casey DE Jr, Eagle KA, Hermann LK, Isselbacher EM, Kazerooni EA, Kouchoukos NT, Lytle BW, Milewicz DM, Reich DL, Sen S, Shinn JA, Svensson LG, Williams DM; American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines; American Association for Thoracic Surgery; American

College of Radiology; American Stroke Association; Society of Cardiovascular Anesthesiologists; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology; Society of Thoracic Surgeons; Society for Vascular Medicine. 2010 ACCF/AHA/AATS/ ACR/ASA/SCA/SCAI/SIR/STS/SVM guidelines for the diagnosis and management of patients with Thoracic Aortic

Disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, American Association for Thoracic Surgery, American College of Radiology, American Stroke Association, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of Thoracic Surgeons, and Society for Vascular Medicine. *Circulation* 2010; 121(13):e266-369. doi: [10.1161/CIR.0b013e3181d4739e](https://doi.org/10.1161/CIR.0b013e3181d4739e)

2. Isselbacher EM, Bonaca MP, Di Eusanio M, Froehlich J, Bossone E, Sechtem U, Pyeritz R, Patel H, Khoynezhad A, Eckstein HH, Jondeau G, Ramoni F, Abbasi M, Montgomery D, Nienaber CA, Eagle K, Lindsay ME. Recurrent aortic dissection: observations from the international registry of aortic dissection. *Circulation* 2016; 134(14):1013-1024. doi: [10.1161/CIRCULATIONAHA.115.019359](https://doi.org/10.1161/CIRCULATIONAHA.115.019359)

3. Kolh P, Windecker S, Alfonso F, Collet JP, Cremer J, Falk V, Filippatos G, Hamm C, Head SJ, Jüni P, Kappetein AP, Kastrati A, Knuuti J, Landmesser U, Laufer G, Neumann FJ, Richter DJ, Schauerte P, Sousa Uva M, Stefanini GG, Taggart DP, Torracca L, Valgimigli M, Wijns W, Witkowski A; European Society of Cardiology Committee for Practice Guidelines, Zamorano JL, Achenbach S, Baumgartner H, Bax JJ, Bueno H, Dean V, Deaton C, Erol Ç, Fagard R, Ferrari R, Hasdai D, Hoes AW, Kirchhof P, Knuuti J, Kolh P, Lancellotti P, Linhart A, Nihoyannopoulos P, Piepoli MF, Ponikowski P, Sirnes PA, Tamargo JL, Tendera M, Torbicki A, Wijns W, Windecker S; EACTS Clinical Guidelines Committee, Sousa Uva M, Achenbach S, Pepper J, Anyanwu A, Badimon L, Bauersachs J, Baumbach A, Beygui F, Bonaros N, De Carlo M, Deaton C, Dobrev D, Dunning J, Eeckhout E, Gielen S, Hasdai D, Kirchhof P, Luckraz H, Mahrholdt H, Montalescot G, Paparella D, Rastan AJ, Sanmartin M, Sergeant P, Silber S, Tamargo J, ten Berg J, Thiele H, van Geuns RJ, Wagner HO, Wassmann S, Wendler O, Zamorano JL; Task Force on Myocardial Revascularization of the European Society of Cardiology and the European Association for Cardio-Thoracic Surgery; European Association of Percutaneous Cardiovascular Interventions. 2014 ESC/EACTS Guidelines on myocardial revascularization: the Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS). Developed with the special contribution of the European Association of Percutaneous Cardiovascular Interventions (EAPCI). *Eur J Cardiothorac Surg* 2014; 46(4):517-92. doi: [10.1093/ejcts/ezu366](https://doi.org/10.1093/ejcts/ezu366)

4. Koracevic GP. Prehospital thrombolysis expansion may raise the rate of its inappropriate administration in ST-elevation acute myocardial infarction induced by aortic dissection. *Am J Emerg Med* 2013; 31(3):628-629. doi: [10.1016/j.ajem.2012.12.022](https://doi.org/10.1016/j.ajem.2012.12.022)

5. Lentini S, Perrotta S. Aortic dissection with concomitant acute myocardial infarction: From diagnosis to management. *J Emerg Trauma Shock* 2011; 4(2):273-8. doi: [10.4103/0974-2700.82221](https://doi.org/10.4103/0974-2700.82221)

6. Luo JL, Wu CK, Lin YH, Kao HL, Lin MS, Ho YL, Chen MF, Chao CL. Type A aortic dissection manifesting as acute myocardial infarction: still a lesson to learn. *Acta Cardiol* 2009; 64(4):499-504. doi: [10.2143/AC.64.4.2041615](https://doi.org/10.2143/AC.64.4.2041615)

7. Núñez-Gil IJ, Bautista D, Cerrato E, Salinas P, Varbella F, Omedè P, Ugo F, Ielasi A, Giammaria M, Moreno R, Pérez-Vizcayno MJ, Escaned J, De Agustin JA, Feltes G, Macaya C, Fernández-Ortiz A; Registry on Aortic Iatrogenic Dissection (RAID) Investigators. Incidence, Management, and Immediate- and Long-Term Outcomes after Iatrogenic Aortic Dissection during Diagnostic or Interventional Coronary Procedures. *Circulation* 2015; 131(24):2114-9. doi: [10.1161/CIRCULATIONAHA.115.015334](https://doi.org/10.1161/CIRCULATIONAHA.115.015334)

8. Sasaki S, Watanabe H, Shibayama K, Mahara K, Tabata M, Fukui T, Tobaru T, Takanashi S, Sumiyoshi T, Tomoike H. Three-dimensional transesophageal echocardiographic evaluation of coronary involvement in patients with acute type A aortic dissection. *J Am Soc Echocardiogr* 2013; 26(8):837-45 doi: [10.1016/j.echo.2013.05.001](https://doi.org/10.1016/j.echo.2013.05.001)

9. Williams JB, Peterson ED, Zhao Y, O'Brien SM, Andersen ND, Miller DC, Chen EP, Hughes GC. Contemporary results for proximal aortic replacement in North America. *J Am Coll Cardiol* 2012; 60(13):1156-62. doi: [10.1016/j.jacc.2012.06.023](https://doi.org/10.1016/j.jacc.2012.06.023)